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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,374	09/11/2000	Dietrich Haarer	SPM-301-A	2294

7590                    04/08/2003

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EXAMINER

CROSS, LATOYA I

ART UNIT	PAPER NUMBER
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1743

15

DATE MAILED: 04/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/601,374	HAARER ET AL.
	Examiner	Art Unit
	LaToya I. Cross	1743

-- The MAILING DATE of this communication app ars on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 23 December 2002.

2a) This action is FINAL.                  2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-10 and 12-25 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-10 and 12-25 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on 30 December 2002 is: a) approved b) disapproved by the Examiner  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

This Office Action is in response to Applicants' amendment filed on December 23, 2002 and entered as Paper No. 10. Claims 1-10 and 12-25 are pending.

***Withdrawal of Rejections from Previous Office Action***

- The rejection of claims 1-24 under 35 USC 112, first paragraph is withdrawn in view of Applicants' argument that the chemical formula having various R groups are all enabled by the specification, since the specification sets forth the chemical substituents to be used in the invention.
- The rejection of claims 1-24 under 35 USC 112, second paragraph is withdrawn in view of Applicants' amendment to better clarify the claims.

***Drawings***

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on December 30, 2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

***Specification***

2. The abstract of the disclosure is objected to because in the second paragraph at page 2 of the specification, Applicants refer to the claims. It is improper to refer forward in such a manner. Correction is required. See MPEP § 608.01(b). Further, claims 4 and 5 refer to the drawings for the chemical structure of the indicator. It is suggested that Applicants incorporate these structures into the claims, instead of referring to the drawings.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 7, 9, 16-19 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by W096/06643 to Kanakkanatt

5. Kanakkanatt '643 teaches packaging materials containing dyes to be used to indicate possible spoilage and indicate that a package has been exposed to undesirably high or low temperatures (See abstract). At page 2, lines 18-21, Kanakkanatt '643 teaches incorporation of photochromic dyes into polymeric materials (matrix) as recited in claim 1. When the photochromic dye is exposed to specific stimuli, such as UV light, a color change in the dye results. At page 3, lines 9-22, Kanakkanatt '643 teaches using the dyes in packaging materials, as recited in claim 2. At page 5, lines 29-38, the reference teaches that the color change that results may be reversible where the matrix is to be used again. Regarding claims 16-19, Kanakkanatt '632 teaches that the dye materials may be affixed to (as in a substrate) or incorporated into the packaging materials or may be included as a coating (page 6, lines 31-37). With respect to claims 3, 7 and 9, Kanakkanatt '643 provides examples 1-5, wherein indicator dyes are incorporated into polymeric materials and due to the interactions of the substituent group of the dye, a reversible color change forms. These reactions are a result of transferring of different molecules upon contact with UV light. At page 3, lines 17-19, Kanakkanatt '643 teaches that the color change of the photochromic dye may be

temporary to denote successful irradiation completion. In example 1 of the reference, a photochromic dye is used as an indicator. Upon exposure to UV light, the indicator changes colors and then returned to the original color (clear). This reversible color change is equivalent to Applicants' claimed "discoloration following photo-induced coloration".

Therefore, for the reasons set forth above, Applicants' claimed invention is deemed to be anticipated by Kanakkanatt '643.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 4-6, 8 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanakkanatt '643 in view of Journal of Physical Chemistry article "Photochromism and Thermochromism driven by Intramolecular Proton Transfer in Dinitrobenzyl pyridine Compounds" authored by Corval et al.

The disclosure of Kanakkanatt '643 is given in detail above.

Kanakkanatt '643 fails to disclose photochromic dyes having the formula of claims 4 and 5.

Corval et al teach 2-(2, 4-dinitrobenzyl) pyridine (having the formula of claim 4 and shown in the reference as structure 1) and 2-(2, 4-dinitrobenzyl)- 1, 10-phenanthroline (having the formula of claim 5 and shown in the reference as structure 6). The article teaches that these compounds undergo a photochromic process from a photon transfer reaction. It would have been obvious to one of ordinary skill in the art to use these compounds in the packaging materials of Kanakkanatt '643 due to their unique ability to change visually in response to radiation light. In using such compounds, an effective indicator of spoilage in food products can be provided.

Therefore, for the reasons set forth above, Applicants' claimed invention is deemed to be obvious over Kanakkanatt '643 in view of Corval et al.

9. Claims 10, 12-15, 20-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanakkanatt '643 in view of US Patent 3,999,946 to Patel et al.

The disclosure of Kanakkanatt '643 is given above.

Kanakkanatt '643 does not disclose the additional use of a non-reversible indicator.

Patel et al '946 teach indicator compositions to be used in packaging materials to determine whether perishable items have been exposed to undesirable time – temperature history. Patel et al '946 use indicator dyes whose color change is irreversible, as recited in claim 12. Regarding claims 13 and 14 and 22. Patel et al '946 teach using a filter material with the indicator to eliminate undesirable photo-induced

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reactions (col. 8, lines 5-8). At col. 12, lines 7-9, Patel et al '946 use a reference chart to compare the resulting color, as in claims 15, 20 and 24.

It would have been obvious to one of ordinary skill in the art to use both a reversible indicator dye and an irreversible indicator dye because use of such would allow instant indication of undesirable time temperature conditions and simultaneously serve as a recording device to show a history of the time temperature conditions.

Therefore, for the reasons set forth above, Applicants' invention is deemed to obvious, in view of Kanakkanatt '643 and Patel et al '946.

### *Response to Arguments*

10. Applicant's arguments filed on December 23, 2002 have been fully considered but they are not persuasive. Applicants argue, with respect to the Kanakkanatt '643 reference, that the photochromic dyes are taught to identify the one-time occurrence of a specific stimuli, namely, irradiation treatment of a packaged product. Applicants assert that the reference fails to teach "discoloration following photo-induced coloration". The Examiner disagrees. At page 3 of the Kanakkanatt '643, the reference teaches that photochromic dye indicators may under a temporary color change to denote successful irradiation completion. Further at page 5 of the reference, Kanakkanatt '643 teaches that for applications where the indicator is to be reused without remolding, the color change would desirably be temporary or reversible. The reference also recognizes that some applications will require a temporary color change. To illustrate the temporary color changes, the indicator in example 1 (a photochromic dye indicator) is exposed to UV light. Upon exposure, the indicator changes colors and then returns to its original clear color. This color change followed by disappearance of

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color is the same as Applicants' claimed "discoloration following photo-induced coloration". It is noted that in addition to temporary color changes, Kanakkanatt '643 also teaches permanent color changes; however, the reference clearly sets forth the manner in which one of ordinary skill in the art would go about making a reversible indicator by using temperature changes and/or exposure to chemicals.

**11. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaToya I. Cross whose telephone number is 703-305-7360. The examiner can normally be reached on Monday-Friday 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 703-308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

LIC  
April 3, 2003

  
Jill Warden  
**Supervisory Patent Examiner**  
**Technology Center 1700**